

at the base. The scutellum is, if anything, more rugosely punctured than the mesonotum; the postscutellum is more sparsely punctured. Median segment transversely striated as usual. Propleuræ punctured, more closely above than in the middle. Mesopleuræ more closely and strongly punctured; metapleuræ much less strongly punctured, the middle almost smooth. Coxæ, trochanters, and femora black; the fore coxæ below, the fore femora above and below, and the hinder at both sides below yellow; the fore tibiæ rufous, tinged with yellow; the middle tibiæ rufous, lined with black at the base behind; the posterior entirely black behind; the tarsi rufous, the joints black at the apex. Wings fulvous, tinged with violaceous, the hinder more hyaline in tint. Abdomen black; the apex of the petiole narrowly and the apical half of the other segments testaceous.

One of the examples bears a large species of *Stylopida*.

[To be continued.]

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LV.—*On the Presence of Echis coloratus, Günther, in Africa.* By JOHN ANDERSON, M.D., LL.D., F.R.S.

THIS viper, along with four other species of reptiles, was found by Mr. D. MacAlister in the neighbourhood of the Emerald Mines on the coast of the Red Sea, in nearly the same latitude as Assuan, and was presented by him to the British Museum. I am indebted to the courtesy of Mr. G. A. Boulenger, F.R.S., for his permission to direct attention to the occurrence of this snake in the Eastern Desert of Egypt, as the species is not included in my work on the Reptiles and Batrachians of Egypt, this being the first occasion on which it has been met with on the African continent.

Mr. MacAlister informs me that the five species of reptiles collected by him in the afore-mentioned locality were obtained in a tract of country not more than 9 miles in breadth at any point, lying between the Wadis Rousbaid, Sakêt, and Nugrus, which open one into another and ultimately join the Wadi Gemâl. The first two of these Wadis are dry and stony, but they are covered more or less with "low scrub, *Gash* (*Bassilla*) and *Soyal* (*Mimosa*), and occasionally with small pumpkins." The Wadi Nugrus is sandy and with rather more scrub than in the two preceding Wadis, and the Wadi Gemâl partakes of the same character, but it is more open.

The snakes were caught in the Wadis Nugrus and Sakêt, and the lizards in the latter and in the Wadi Rousbaid. Mr. MacAlister says, "the Reptiles apparently live in the cracks in the gneiss."

*Echis coloratus*, Günther.

Mr. MacAlister captured two females, the measurements &c. of which are recorded in the following table along with those of the type specimen:—

	<i>Echis coloratus</i> , Gthr.		
	♀. Type. Midian, Arabia.	♀. Eastern Desert of Egypt.	♀. Eastern Desert of Egypt.
Snout to vent.....	660	485	378
Tail .....	80	67	54
Ventrals .....	208	188	194
Anal .....	1	1	1
Caudals .....	46	51	51
Scales .....	35	35	35

The type of *E. coloratus*, Günther, was found by the late Sir Richard Burton \* at Jebel Sharr, behind El Mewaylah, in Midian, to the south of the entrance to the Gulf of Akabah, at an elevation of 4500 feet above the level of the sea.

The scales on the upper surface of the head, from the snout to between the eyes, anteriorly, are almost smooth in *E. coloratus*, whereas in *E. carinatus* they are strongly keeled; but on each scale can be detected a central eminence, the equivalent of the elongated and generally well-developed keel which occurs on the scales further back. There are 13 rows of scales across the head between the eyes, but no defined supra-ocular is present. The number of scales round the eyes varies, as on the right side there are 19, and on the left side only 16. There are four rows of scales between the upper labials and the eyes. Twelve to thirteen upper labials, the numbers varying on the opposite sides of the head. Rostral twice as high as broad. Nasal shield variable, not wholly divided on the right side, but completely so on the left, invariably separated from the rostral by two almost shield-like scales, the outermost lying on the first labial, with the innermost, the larger of the two, placed above it and separated from its fellow of the opposite side by two small scales.

\* 'Gold Mines of Midian,' 1878.

Günther described the colour of the type as "greyish, with large pinkish spots on the upperside; they are rounded on the front part of the body, but more irregular and broken up on the posterior. Lower parts whitish, speckled and powdered with greyish."

Mr. MacAlister's two specimens present slight variations from the type, and these are brought out in the two accompanying figures of the front of the snout of (a) the type and (b) of one of the individuals from the Eastern Desert.



*Echis coloratus.*

In the type of *E. coloratus* the rostral is a dome-shaped shield, whereas in the Egyptian specimens it is more or less quadrangular. The form of this shield, however, is doubtless subject to much variation, depending on the number and disposition of the shields around it. In the Midian viper one infranasal intervenes between the nasal and the rostral, and behind it lie two other shields, one above the other, the uppermost in contact with the nasal and the one below it resting on the rostral and on the first labial. The internal infranasals are separated from each other in the mesial line by two small scales resting on the rostral. The supranasals are broadly excluded from the rostral by the foregoing two scales and by the first infranasal. In fig. *b* only one infranasal rests on the rostral, but behind it another infranasal exists between the nasal and front labial without being in any way in contact with the rostral. In this individual the equivalent of the second suprarostrals of the type seems to have fused with the rostral and with the front labial, and in so doing to have given greater transverse breadth to the former shield and greater height to the latter. These variations in no way connect the vipers presenting them with *E. carinatus*.

In the type of *E. coloratus* the supranasals are more or less irregular in form, widely separated from the rostral by the internal infranasals and by the median pair of scales which lie between the latter shields; but in fig. *b* (Eastern Desert viper) the right supranasal is prolonged down to the rostral on

the right side, whilst the supranasal of the opposite side is excluded from the rostral by a small scale. In the other viper from the Emerald Mines both supranasals touch the rostral; but in the two individuals from that locality the supranasals in each case are separated in the mesial line by a single scale.

The downward projection of the supranasals in these examples of *E. coloratus*, feeble though it be, is a variation in the direction of *E. carinatus*, in which these shields are markedly developed, broadly in contact with each other in the mesial line and in a varying degree with the rostral. In a specimen of *E. coloratus* from the Dead Sea the supranasals are large and directly in contact with the rostral, but in another from the same locality they are excluded by the infranasals. In both of these vipers the nasals are separated from the rostral by infranasals. The same variation occurs in vipers from the Hadramut, but, as in *E. carinatus*, the supranasals are in contact mesially. In a specimen in the British Museum said to be from Socotra the rostral is rounded like the type and the supranasals are excluded from contact with it by the infranasals, of which there are two, the second resting on the first upper labial.

The essential feature of *E. coloratus* is the broad separation of the nasal shields from the rostral and from the first upper labial, whereas in *E. carinatus* the nasals rest directly on the rostral and first upper labial. The accompanying figures (*c* and *d*) represent the front view of the snout of *E. carinatus* from Sind and from Jebba on the Upper Niger respectively; and if they are compared with the two modifications of *E. coloratus* (figs. *a* and *b*) the differences between the two species become apparent.



c.



d.

*Echis carinatus.*

As the scales around and between the eyes in the two species vary very nearly within the same limits as to numbers, they are practically by themselves of little use as guides to the distinction of the species; and the same may be said of the scales between the eyes and upper labials, as

examples of *E. coloratus* are met with having three rows of such scales, a number occurring occasionally in *E. carinatus*, in which, however, these scales are usually in two rows, whereas in *E. coloratus* they are either in three or four. The enlarged supraoculars generally present in the former species are usually absent in the latter, and when present they are not well developed.

In the specimens of *E. coloratus* here tabulated the ventrals range from 188 to 203, and the subcaudals from 46 to 51; whereas in *E. carinatus* these shields vary, over the vast area of its distribution, the ventrals from 132 to 194, and the subcaudals from 23 to 48. So few examples of *E. coloratus* are known, it is quite possible that the numbers of its ventrals and consequently of its trunk-vertebræ may rise much higher than the maximum number given above and also fall much below the minimum of 188. The type of *E. carinatus* had only 150 trunk-vertebræ, whereas now, after more than a century of research, individuals have been found with as few as 132 and others with as many as 194—that is to say, that there may be as great a variation as 62 vertebræ. This result is obtained by the consideration of many individuals from Asia and Africa brought together from between Madras and West Africa; but the vertebræ in question may vary as much as 39 among individuals from the same locality (Deccan, India), whereas in others from Sind and from West Africa the number of trunk-vertebræ may be practically the same, viz. 143 and 145. The existence of this enormous range of variation in the number of the vertebræ of the individuals of this genus, even although it takes place in structures which are mere repetitions the one of the other, is very remarkable, because associated with it there is of necessity a corresponding modification of the nervous and vascular systems. With such variations occurring in the form of an animal the possible modification of the epidermal structures would seem to be almost limitless. The *modus operandi* by which Nature effects these unstable variations of the skeleton and soft tissues associated with it is an enigma unsolved by any hypothesis as yet formulated.

The coloration of these vipers from the Eastern Desert is much the same as in the type, and as they have been quite recently killed, its general character is better made out. There are from 43 to 46 more or less transverse, narrow, pale greyish areas, becoming almost light grey spots in the younger specimen on the hinder part of the body. In both these pale areas are margined with dark finely speckled grey, the inter-

vening spaces being reddish buff. The sides of the body on the region of the serrated scales are marked with finely speckled dusky spots, more or less connected with the dorsal reticulations. There are also some dusky spots on the angles of the ventrals. The ventral surface is white, but with faint dusky spots here and there. This type of coloration corresponds in its broad outlines with that of *E. carinatus*. In two females of the latter species from Sind in the British Museum there are 36 and 40 spots respectively much more clearly and vividly defined than in *E. coloratus*, whilst on the tail the spots are practically absent. A specimen from Muskat in the British Museum has the same general type of coloration, but the dark and light markings are less defined, whilst in another young specimen from the same locality the light spots are absent and the dark markings are reduced to two very narrow parallel dorsal lines, largish brown spots occurring on the lateral serrated scales and a small brown spot on the angle of nearly every third ventral. In the specimen supposed to have come from Socotra the general colour above is dark slaty, with brown spots more or less obscurely present along the mesial line of the back, and irregularly shaped brown spots along the sides. No pale dorsal spots are present, but the ventral surface is obscurely spotted posteriorly. The specimens from the Dead Sea are pale yellowish, with the dark and pale markings not clearly defined and the ventrals immaculate.

In no viper with infranasals has the head ever been found to have its upper surface bearing the symmetrical dark brown markings present in a greater or less degree in vipers with their nasals resting directly on the rostral and on the front upper labial.

*E. coloratus* is as yet known only from Arabia, Southern Syria (Dead Sea), the Eastern Desert of Egypt, and from the island of Socotra.

#### *Ptyodactylus Hasselquistii*, Donndorff.

This is an example of the pallid typical form with the nostril but little, if at all, tubular. This is the most southern point it has yet been recorded from the Eastern Desert, but it is common as far south as Wadi Halfa.

#### *Agama spinosa*, Gray.

Two specimens, differing in no respect from the examples from Suakin. As already pointed out by me, the type of

this species, presented very many years ago to the British Museum by James Burton, the distinguished Egyptologist, came, in all likelihood, from the Eastern Desert about the latitude of Keneh.

*Eremias guttulata*, Licht.

Three specimens. This species is distributed all over Egypt, from Suez to Suakin.

*Psammodromis Schokari*, Forskål.

This specimen, in its almost pale fawn-colour and the presence of two darker-coloured lines along the back and the obscure dotting of the ventrals, especially on the sides, and distinct head-markings, resembles the individuals of this species found at Durrur to the south. The number of its ventrals (190) largely exceeds the number found there and at Suakin, and in this respect it conforms to snakes of this species found at Assuan. It has 118 caudals.

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*Bird Books.*

*In Bird-land, with Field-glass and Camera.* By OLIVER G. PIKE. T. Fisher Unwin & Co. Pp. 1-280, with 83 photographs from Nature. 1900. Price 6s.

*The Birds of Eastern North America.* By CHARLES CORY. Printed for the Field Columbian Museum, Chicago, Ill. 1899. Parts I., II.

THE strides which photography has made among us of late years we regard with a jealous eye. Not satisfied with ousting the beautiful wood and steel engravings which adorned the pages of our older books, it has gone now so far as to displace literature itself, so that many of the "books" which are thrust upon a long-suffering and defrauded public to-day are practically little more than collections of bad pictures served up with a sprinkling of worse text—added for appearance' sake.

To every rule, however, there are exceptions; and there are occasions when we feel real gratitude towards the enthusiastic photographer.

Ornithologists are without doubt indebted to the Kearton brothers for the work which they have done and recorded in this field. The